**Think Aloud Moves**

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| Complex Process being Modeled:  Students, today I am going to think aloud on how to analyze and evaluate a situation from your lives for Newton’s Three Laws. Today we are only focusing on Newton’s Third Law of action reaction. However, I will demonstrate how to do this with all three laws. |
| Importance of Process:  This is very important for two reasons. First, remember that you are to be doing this for your threaded discussion on wordpress and we will be evaluating all three laws of one situation for a CSR. Secondly, and most importantly, I am modeling how to critically think about the world around you. Remember back to the first day where I said, “I am here to teach you to think.” This is one of those days. Learning to be a thinker will be one of the most important skills in your life. |
| Description of Thought Process:  Remember during this process, I will be thinking aloud. This means there will be no interaction between you and me. If I ask a question, I am only modeling the questions you should be asking yourself. I do not want a response. You will have plenty of opportunities to interact after my modeling.  The first thing I am looking for is Newton’s First Law. I know, from my previous learning, that this law states that an unbalanced force must be applied to an object to make it move. I notice that the girls are changing motion all the time. I want to know how they are able to jump off the ground. Well I know there must be unbalanced force to change direction. So what is the unbalanced force? Well, they’re jumping up. This means they are applying an unbalance force down on the ground. This force is strong enough to overcome gravity.  The second thing I am looking for is Newton’s Second Law. This states that F=ma. I notice that some of the players are able to hit the ball faster or with more acceleration. Why is this? Well the mass must be the same because the ball never changes. I know that if I want to increase acceleration, I must increase the force applied to the object. This means the players that hit the ball faster must be applying a greater force to the ball.  Last is Newton’s Third Law. This law states that for every action there must be an equal and opposite reaction. I know that the Law of Conservation of Momentum comes into play. I also know that the players are hitting the ball with a great force and this causes red marks on their arms. Why is this? Knowing Newton’s Third Law helps me explain that the players are absorbing some of the momentum from the ball. The ball also changes directions. This must be because that the players arms are applying the same force but in an opposite direction on the ball. |
| Reminder of Process:  I just modeled how to evaluate and analyze a source using Newton’s Three Laws. I now want you to summarize what I said. As you summarize, fill out your graphic organizer. You will be doing this with a partner from a different table with the same color. You have ten seconds to find that partner. If you cannot find one come stand by me. |
| Guided Practice:  Students will now watch another video and fill out the graphic organizer for Newton’s Third Law. They must provide explanation about their thinking. (I thought…. because….) |
| Independent Practice:  Students will participate in a threaded discussion about their own situations. Once again, they must explain their thinking. |